

**AMENDMENTS TO THE DRAWINGS:**

The attached sheet of drawings includes corrections to text.

Attachment: One (1) Replacement Sheet (Figure 24)

## **REMARKS**

### **Status of the claims**

Claims 1-6, 8-10, 20-32, 34, 36-141, and 143-154 have been canceled without prejudice or disclaimer. Claims 7, 11, 12, 13, 14, 15, 16, and 33 have been amended. New claims 155-158 have been added. Claims 7, 11-19, 33, 35, 142, and 155-158 are now pending in this application.

New claim 155 is directed to automatic X-shifting of the first diffraction pattern in a method for analyzing patterns of claim 33. Support for this claim can be found at paragraph 103.

New claim 156 is directed to a method for analyzing patterns. Support for this claim can be found at paragraph 65 and figure 2.

New claim 157 is directed to detecting characteristic peaks of claim 156. Support for this claim can be found at figure 5 and paragraphs 85 and 86.

New claim 158 is directed to discretely allocating the determined characteristic peaks of claim 157. Support for this claim can be found at paragraph 95 and figure 5.

### **Restriction requirement**

Applicants continue to disagree with the election/restriction requirement and the rationale for the restriction/election requirement provided by the Examiner for the reasons of record. Nonetheless, the restriction/election requirement should be moot since the claims withdrawn from consideration have been canceled.

### **Objection to Figure 24**

The Examiner objected to Figure 24 for using the word "March" instead of "Match." The replacement drawing attached to this Amendment corrects the text.

### **Objections**

The Examiner objected to several claims as explained on pages 4-9 of the Office Action.

The objection to claim 6 in paragraph no. 3 should be withdrawn because claim 6 has been canceled.

The objection to claims 13-19 and 35 in paragraph nos. 4-6 should be withdrawn in view of the current amendments.

The remaining objections in paragraph nos. 7-32 should be moot because the claims objected are no longer pending.

By canceling or amending any claims, applicants do not express agreement with the rationale provided by the Examiner in support of any of the objections.

### **Rejections under 35 U.S.C. §§ 101 and 102**

The Examiner rejected claims 95-121, 125-141, 144, 147 and 154 under 35 U.S.C. § 101. Although applicants do not agree with the rejection, it is moot because the rejected claims have been canceled.

The Examiner rejected claims 48-74, 78-94, 143, 146, 149 and 153 under 35 U.S.C. § 102(b). Although applicants do not agree with the rejection, it is moot because the rejected claims have been canceled.

The Examiner rejected claims 1, 3, 10, 11, 13-19, 25, 31, 32, 35, 39-43, 142, 145, and 151 under 35 U.S.C. § 102(e) as being anticipated by Raich (U.S. Pub. No. 2006/0015265 A1). The rejection to claims 1, 3, 10, 25, 31, 32, 39-43, 145, and 151 is moot because those claims have been canceled.

Claim 11 was rejected based on paragraph 18 of Raich, with the Examiner arguing that Raich discloses the method of claim 10 wherein the peaks are either crystalline. First, Applicants note that claim 10 has been canceled and Applicants have changed the dependency of claims 11 and 12 to claim 142. Further, the passage cited by the Examiner is silent as to using either crystalline or amorphous peaks to determine similarities. In addition, it specifically teaches that similarities are determined based on the sum of differences at each  $2\theta$ . In the present invention, however, the claims do not rely on the complete set of diffraction data but rather only on characteristic peaks. Raich even teaches that for diffraction patterns on unknown compounds, it would not be possible to use a peak approach [Raich, par. 16].

Claims 13, 15-19, and 35 were rejected in view of paragraph 26 of Raich. The dependency of these claims have been amended wherein claim 13 now depends from claim 142 and not deleted claim 1.

Paragraph 26 of Raich teaches an x-ray analysis of 142 zeolite samples. All of the samples were analyzed, according to Raich, by hierarchical clustering analysis to determine similarities. The paragraph does not teach the use of characteristic peaks. Instead, it merely teaches how the patterns were collected and the data parameters for that collected are provided. Indeed, the example specifically states that "[t]he similarities were determined based upon the sum of the squared differences at **each** 20[sic] using unweighted fill patterns and the average distance between all pairs of materials from each cluster." [0026, emphasis added]. By comparison, Applicants in these claims do not employ data at each 20, rather, only the subset of those 20 positions that are characteristic peaks as that term is used in claim 142 and defined in the specification. For example, paragraph 85 and figure 5 of the instant application explain the methodology behind determining characteristic peaks: "These peaks are points on the pattern that are greater than a minimum height, greater than a minimum width and with a degree of lateral space from the nearest neighbors." [Paragraph 85].

There are additional differences between Raich and the claims. Whereas Raich has no teaching directed to assigning a probability, claims 13, 15-19 and 35 are all directed to employing such a score. Nor does the passage cited by the Examiner above teach classifying peaks into discrete groups based on the probability scores. Thus, neither the peak position nor its probability score are taken into account when computing similarity in Raich. The dendrogram of Figure 1 illustrates the differences. It is referred to in paragraph 26 of Raich as an example of hierarchical clustering. That clustering is not the same as the grouping done according to claim 13 which occurs during the process of determining characteristic peaks. Other teachings are similarly missing from Raich. For example, claims 15-19 are directed to pattern matching using probability scores and group allocations, none of which is taught by Raich. In claim 35, matching split peaks with peaks having a shoulder are claimed and Raich is silent on this as well.

The Examiner bases the rejection of claim 142 on paragraphs 17 and 26 of Raich. Applicants note, however, that paragraph 26 lines 10-22 of Raich are based upon employing each 20 intensity and does not employ using characteristic peaks. Thus, claim 142 differs from the teaching of Raich. Indeed, an advantage of using the

characteristic peak approach is better accuracy and a greater robustness to issues such as preferred orientation and particle statistics that are sometimes associated with x-ray diffraction data. Likewise, claim 14, which now depends from claim 142, is not anticipated by Raich.

For at least the reasons provided above, applicants respectfully request that the Examiner withdraw this rejection.

### **Rejections under 35 U.S.C. § 103**

The Examiner has rejected claims 2, 4-9, 20, 23, 24, 26, 27, 33, 36-38, 44, 46, and 47 as being unpatentable over Raich as applied to claims 1, 10, and 25 above and also in view of Cullity and Stock. Applicants have canceled claims 1, 2, 4-6, 8, 9, 20, 23, 24, 25, 26, 27, 3, 38, 44, 46, and 47. Therefore, rejections to these claims are moot. With respect to claim 7, Examiner maintains that although Raich fails to disclose a method step of computing the variance of the diffraction pattern, Cullity and Stock disclose such a method. The claim, however, is not directed to computing errors in the measured intensity of a diffraction line above background, rather, the variance in the diffraction patterns is used to automatically adjust parameters in the peak detection algorithm. To clarify the claim, Applicants have amended the claim so that the variance is used for peak detection. Support for this amendment can be found at paragraph 89 and also in figure 6.

With respect to claim 33, Examiner maintains that whereas Raich discloses that "the similarity between x-ray diffraction is defined as the sum of the differences in intensities between two patterns at each 2θ", it fails "to disclose x-shifting the first diffraction pattern prior to determining the similarity between the first diffraction pattern and the second diffraction pattern and determining the similarity between the first diffraction pattern and the third diffraction pattern." (Office Action at page 19). However, the claims as presently presented do not define similarity as taught by Raich. As noted above, similarity in the instant application is calculated by comparing characteristic peaks and not each 2θ value. In addition, although Cullity and Stock do teach that x-shifting occurs due to uniform strain, it provides no guidance on how to correct for it. By comparison, claim 33 is supported by the specification at figure 9 and

at paragraphs 97-103. As taught by the specification, the X-shifting may be done manually or automatically. Applicants have added dependent claim 155 wherein the X-shifting is done automatically.

Claims 21, 22 and 45 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Raich. Although applicants do not agree with the rejection, it is moot because the rejected claims have been canceled.

Claims 95-121 and 125-141 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Raich and Cullity and Stock. Although applicants do not agree with the rejection, it is moot because the rejected claims have been canceled.

Claim 152 was rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,507,636 in view of Raich. Although applicants do not agree with the rejection, it is moot because the rejected claims have been canceled.

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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GARRETT & DUNNER, L.L.P.

Dated: September 14, 2006

By: 

Steven J. Scott  
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Attachment:

One (1) Replacement Sheet (Figure 24)